IN THE CLAIMS

1.   (Currently Amended)   An apparatus for verifying a validity of a path, comprising:

a network element included in a first autonomous system and ~~operable to receive~~ **receiving** an advertisement communication from a second autonomous system that includes a list of one or more connected autonomous systems, wherein the network element ~~is operable to identify~~ **identifies** whether the first autonomous system claims a connection to the second autonomous system and whether the second autonomous system claims a connection to the first autonomous system such that two-way connectivity is established between the autonomous systems, the network element ~~being further operable to respond~~ **responding** to the establishment of the two-way connectivity by constructing a directed graph that includes two nodes representing the first and second autonomous systems respectively, and wherein an edge ~~may be~~ **is** formed that connects the two nodes**, whereby additional two-way connectivity checks are performed through advertisements in a border gateway protocol (BGP) such that unverified states are removed from the directed graph, and wherein when a third autonomous system sends routing information associated with a third path to the first autonomous system, the third path is verified by examining validated connections in the directed graph**.

2.   (Currently Amended) The apparatus of Claim 1, wherein the network element ~~is operable to receive~~ **receives** an update message from the second autonomous system, the update message including an autonomous system path, and wherein the network element ~~may verify~~ **verifies** the autonomous system path by referencing the directed graph.

3.　　(Original)　The apparatus of Claim 1, wherein the network element is a selected one of a group of elements consisting of:

(a)　　a router;

(b)　　a switch;

(c)　　a bridge;

(d)　　a gateway;

(e)　　a loadbalancer; and

(f)　　a processor.

4.　　(Original)　The apparatus of Claim 1, wherein the network element includes a table operable to store the directed graph and to be referenced in order to verify one or more autonomous system paths that are received by the network element in one or more update messages.

5.　　(Original)　The apparatus of Claim 1, wherein the advertisement communication is encapsulated in a border gateway protocol (BGP).

6.　　(Currently Amended)　The apparatus of Claim 1, wherein the network ~~element is operable to communicate~~ **communicates** the directed graph to an administrator element that is operable to communicate information included within the directed graph to one or more additional network elements.

7.   (Currently Amended) A method for verifying a validity of a path, comprising:

receiving an advertisement communication at a first autonomous system from a second autonomous system, the advertisement communication including a list of one or more connected autonomous systems;

identifying whether the first autonomous system claims a connection to the second autonomous system and whether the second autonomous system claims a connection to the first autonomous system such that two-way connectivity is established between the autonomous systems; and

responding to the establishment of the two-way connectivity by constructing a directed graph that includes two nodes representing the first and second autonomous systems respectively, wherein an edge may be **is** formed that connects the two nodes, **whereby additional two-way connectivity checks are performed through advertisements in a border gateway protocol (BGP) such that unverified states are removed from the directed graph, and wherein when a third autonomous system sends routing information associated with a third path to the first autonomous system, the third path is verified by examining validated connections in the directed graph**.

8.   (Currently Amended) The method of Claim 7, further comprising:

receiving an update message from the second autonomous system, the update message including an autonomous system path, wherein the network element may verify **verifies** the autonomous system path by referencing the directed graph.

9.   (Original) The method of Claim 7, wherein the first autonomous system includes a network element that includes a table operable to store the directed graph and to be referenced in order to verify one or more autonomous system paths that are received by the network element in one or more update messages.

10.   (Original) The method of Claim 7, wherein the advertisement communication is encapsulated in a border gateway protocol (BGP).

11.   (Original) The method of Claim 7, wherein a network element included in the first autonomous system is operable to communicate the directed graph to an administrator element that is operable to communicate information included within the directed graph to one or more additional network elements.

12.   (Currently Amended) A system for verifying a validity of a path, comprising:

means for receiving an advertisement communication at a first autonomous system from a second autonomous system, the advertisement communication including a list of one or more connected autonomous systems;

means for identifying whether the first autonomous system claims a connection to the second autonomous system and whether the second autonomous system claims a connection to the first autonomous system such that two-way connectivity is established between the autonomous systems; and

means for responding to the establishment of the two-way connectivity by constructing a directed graph that includes two nodes representing the first and second autonomous systems respectively, wherein an edge ~~may be~~ **is** formed that connects the two nodes**, whereby additional two-way connectivity checks are performed through advertisements in a border gateway protocol (BGP) such that unverified states are removed from the directed graph, and wherein when a third autonomous system sends routing information associated with a third path to the first autonomous system, the third path is verified by examining validated connections in the directed graph**.

13.   (Currently Amended) The system of Claim 12, further comprising:

means for receiving an update message from the second autonomous system, the update message including an autonomous system path, wherein ~~the~~ **a** network element ~~may verify~~ **verifies** the autonomous system path by referencing the directed graph.

14.   (Original) The system of Claim 12, wherein the first autonomous system includes a network element that includes a table operable to store the directed graph and to be referenced in order to verify one or more autonomous system paths that are received by the network element in one or more update messages.

15.   (Original)   The system of Claim 12, wherein the advertisement communication is encapsulated in a border gateway protocol (BGP).

16.   (Original) The system of Claim 12, wherein a network element included in the first autonomous system is operable to communicate the directed graph to an administrator element that is operable to communicate information included within the directed graph to one or more additional network elements.

17.   (Currently Amended) Software embodied in a computer readable medium, the software comprising computer code such that when executed is operable to:

receive an advertisement communication at a first autonomous system from a second autonomous system, the advertisement communication including a list of one or more connected autonomous systems;

identify whether the first autonomous system claims a connection to the second autonomous system and whether the second autonomous system claims a connection to the first autonomous system such that two-way connectivity is established between the autonomous systems; and

respond to the establishment of the two-way connectivity by constructing a directed graph that includes two nodes representing the first and second autonomous systems respectively, wherein an edge ~~may be~~ **is** formed that connects the two nodes**, whereby additional two-way connectivity checks are performed through advertisements in a border gateway protocol (BGP) such that unverified states are removed from the directed graph, and wherein when a third autonomous system sends routing information associated with a third path to the first autonomous system, the third path is verified by examining validated connections in the directed graph**.

18.   (Currently Amended) The medium of Claim 17, wherein the code is further operable to:

receive an update message from the second autonomous system, the update message including an autonomous system path, wherein ~~the~~ **a** network element ~~may verify~~ **verifies** the autonomous system path by referencing the directed graph.

19.   (Original) The medium of Claim 17, wherein the first autonomous system includes a network element that includes a table operable to store the directed graph and to be referenced in order to verify one or more autonomous system paths that are received by the network element in one or more update messages.

20.   (Original)   The medium of Claim 17, wherein the advertisement communication is encapsulated in a border gateway protocol (BGP).

21.   (Original) The medium of Claim 17, wherein a network element included in the first autonomous system is operable to communicate the directed graph to an administrator element that is operable to communicate information included within the directed graph to one or more additional network elements.